REMARKS

Claims 6-45 are pending in the application. Claims 22-25 and 42-45 have been amended. Claims 34, 37 and 39 have been allowed. Claims 6-12,15-16, 18, 22-24, 26-33, 35, 38 and 42-44 stand rejected as obvious in view of U.S. Patent No. 5,990,904 to Griffin ("Griffin"), U.S. Patent No. 5,809,210 to Pearce et al ("Pearce"), and U.S. Patent Publication No. 2002/0097241 to McCormack et al. ("McCormack"). Claims 22-24 and 42-44 also stand as rejected as indefinite under 35 U.S.C. § 112, ¶ 2. Claims 13, 20-21, and 40-41 stand rejected as obvious in view of Griffin, Pearce, McCormack and U.S. Patent No. 6,426,755 to Deering ("Deering"). Claims 25 and 45 stand rejected as obvious in view of Griffin, Pearce, McCormack and the *Computer Graphics: Principles and Practice* text written by Foley et al. ("Foley"). Claims 14, 17 and 19 stand as objected to, presumably because they depend from rejected claims 13, 16 and 18, respectively. The applicant respectfully traverses these rejections, and requests reconsideration of claims 6-33, 35-36, 38 and 40-45 for the reasons noted below.

REJECTION OF CLAIMS AS INDEFINITE

The Examiner rejected claims 22-24 and 42-44 as indefinite because it is unclear how "clusters of objects that do not interact can then be classified as non-simple object clusters . . . [which] are disclosed as containing objects which overlap." *Office Action* at 2. Applicant has amended claims 22 and 42 to respectively recite a method and computer program product for performing the method for rendering a plurality of scan-converted 3-D objects to a 2-D scene, including "splitting the plurality of scan-converted 3-D objects into one or more object clusters; [and] rendering all non-simple object clusters to a motion buffer." Claims 23-25 and 43-45 depend from claims 22 and 42, respectively. The applicant believes the amendment made to claims 22 and 42 moots the Examiner's rejection of claims 22-24 and 42-44 as indefinite, and respectfully requests the Examiner to withdraw this rejection.

REJECTION OF CLAIMS AS OBVIOUS

The Examiner rejected claims 6-12,15-16, 18, 22-24, 26-33, 35, 38 and 42-44 as obvious in view of Griffin, Pearce and McCormack, rejected claims 13, 20-21, and 40-41 as obvious in view of Griffin, Pearce, McCormack and Deering, and rejected claims 25 and 45 as obvious in view of Griffin, Pearce, McCormack and Foley. The applicant respectfully disagrees for the reasons noted below.

Claims 6 and 26 respectively recite a method and computer program product configured to perform a method for creating a motion buffer to store the local properties of one or more scan-converted 3-D objects, including "scan-converting each 3-D object's one or more object primitives into a plurality of pixel fragments . . . configured to store . . . the object primitive's local color, depth, coverage, transfer mode, rate of change of depth with time and surface geometry information." Claims 7-8 and 27-28 respectively depend from and contain this limitation of claims 6 and 26. Claims 9 and 29 respectively recite a method and computer program product configured to perform a method for compositing one or more scan-converted 3-D objects to a 2-D scene, including "receiving a motion buffer . . . containing the rendered local properties of the one or more scan-converted 3-D objects including each scan-converted 3-D object's color, depth, coverage, transfer mode, rate of change of depth with time, and surface geometry information." Claims 10-21 depend from claim 9 and contain this limitation, while claims 30-33, 35-36, 38, and 40-41 depend from claim 29 and contain this limitation. Claims 22 and 42 respectively recite a method and computer program product for performing a method for rendering a plurality of scan-converted 3-D objects to a 2-D scene, including "rendering all non-simple object clusters to a motion buffer . . . containing the rendered local properties of the one or more scan-converted 3-D objects including each scan-converted 3-D object's color, depth, coverage, transfer mode, rate of change of depth and surface geometry information." Claims 23-25 and 43-45 respectively depend from and contain this limitation of claims 22 and 42.

In rejecting each of claims 6-12,13, 15-16, 18, 20-21, 22-24, 25, 26-33, 35, 38, 40-41, 42-44 and 45 as obvious, the Examiner relied on Pearce to meet the limitation of "scan-converting each 3-D object's one or more object primitives into a plurality of pixel fragments . . . configured

to store . . . the object primitive's . . . rate of change of depth with time" as recited in claims 6-8 and 26-28, "receiving a motion buffer . . . containing the rendered local properties of the one or more scan-converted 3-D objects including each scan-converted 3-D object's . . . rate of change of depth with time" as recited in claims 9-21 and 29-41, and "rendering all non-simple object clusters to a motion buffer . . . containing the rendered local properties of the one or more scan-converted 3-D objects including each scan-converted 3-D object's . . . rate of change of depth" as recited in claims 22-25 and 42-45. *See, e.g., Office Action* at 4. In particular, the Examiner relied on Pearce to meet these limitations because Pearce "teaches that a viewer uses the blurriness of the object in the individual frames to make assumptions about its relative velocity and predictions about its position in subsequent frames," and further "teaches that the segments in Fig. 6 are drawn with respect to the z (depth) and t (time) axis." *Id.*

The applicant respectfully disagrees that Pearce teaches or discloses these limitations in claims 6-8, 9-21, 22-25, 26-28, 29-41 and 42-45. Instead, Pearce teaches simulating a 3-D object's motion blur while rendering the object by "analyzing the movement of tessellated representations of surfaces relative to a stationary sampling point on a pixel." *Pearce* at 1:45-48. This is done by "identifying the intersections between the leading and trailing edges of . . . individual polygon[s] with the stationary sampling point. These *intersection points* define the boundaries of segments that indicate the sub-interval of exposure time where the sampling point is inside the polygon." *Id.* at 1:53-55 (emphasis added). These time sub-intervals are then used to group together the surfaces of 3-D object's "based upon the continuity of time coverage," *id.* at 2:5-6, and to combine them "based upon the time coverages of each of the groups." *Id.* at 2:33-35.

Thus, rather than teaching calculating and storing in a 2-D pixel fragment a 3-D object's rate of change of depth, and later using that pixel fragment to render an image, Pearce teaches calculating and storing a 3-D object's "intersection points," which are points where the 3-D object's projection onto a pixel intersects the pixel's sampling point, and then using these "intersection points" to calculate the 3-D object's temporal coverage over the pixel. This is also evident from the discussion of Figs. 5 and 6, part of which the Examiner relies upon to reject the

claims. Fig. 6 shows a sequence of line segments that are defined by "intersection points," (e.g., A_s, A_e), that are "based upon the intersection of leading and/or trailing edges with a stationary sampling point." *Id.* at 6:49-51. As shown in TABLE 1, *id* at 8:5-15, these "intersection points" identify a 3-D polygon A, "and the time points bounding the time of the polygon's coverage (e.g., A_s, A_e) of the sampling point." *Id.* at 7:63-65. This is also evident in the discussion of Pearce's Fig. 4, where discloses it is stated that "the present invention identifies the segments of time during which a sampling point is inside a moving polygon." *Id.* at 4:62-64.

Thus, rather than disclosing "scan-converting each 3-D object's one or more object primitives into a plurality of pixel fragments . . . configured to store . . . the object primitive's . . . rate of change of depth with time" as recited in claims 6-8 and 26-28, or "receiving a motion buffer . . . containing the rendered local properties of the one or more scan-converted 3-D objects including each scan-converted 3-D object's . . . rate of change of depth with time" as recited in claims 9-21 and 29-41, or "rendering all non-simple object clusters to a motion buffer . . . containing the rendered local properties of the one or more scan-converted 3-D objects including each scan-converted 3-D object's . . . rate of change of depth" as recited in claims 22-25 and 42-45, Pearce discloses calculating a 3-D object's temporal coverage of a pixel by calculating the times during which that object's projection onto a pixel intersects a pixel sampling point. Nowhere does Pearce suggest or disclose calculating or storing the 3-D object's rate of change of depth with time in a 2-D pixel fragment. Consequently, claims 6-8, 9-21, 22-25, 26-28, 29-41 and 42-45 are patentable over the combination of Pearce with any of Griffin, McCormack, Deering and Foley.

Please charge deposit account 06-1050 in the amount of $120.00 for the Petition for One-Month Extension of Time fee, and apply any other applicable charges or credits to deposit account 06-1050.

Respectfully submitted,

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John F. Horvath
Reg. No. 47,663

Customer Number 021876
Fish & Richardson P.C.
P.O. Box 1022
Minneapolis, MN 55402
Telephone: (302) 652-5070
Facsimile: (877) 769-7945

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